UNITED STATES PATENT AND TRADEMARK OFFICE

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10/574,462	03/31/2006	Ernest Grimberg	31363	2546

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EXAMINER
MALEVIC, DJURA

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 August 2009*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *63-69,71-80 and 82-90* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *63-69,71-80 and 82-90* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All   b)☐ Some *   c)☐ None of:

   1.☒ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 08/27/2009 have been fully considered but they are not persuasive.

With regards to claims 63 and 77, applicant argues that Kauer utilizes a feedback signal to control various aspects of the sensor operation while not using the feedback signal in accordance with a property of an IR image and further that the feedback signal influence over the sensor array is minimal. Additional, applicant contends that neither Yang nor Kauer teach the claimed subject matter. The examiner respectfully disagrees.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this instance, Kauer is provided to show that generating a signal via outputs which are integral to the system is expressly known as feedback.

Although, Yang fails to expressly disclose feedback, Yang implies a feedback system (See Figure 1B, 2, and 2a). The infrared sensor, such as that taught by Yang, is reconfigured and adjusted in real time (See page 10, line 23 – page 11, line 21). This allows for improvements of the system's targeting performance (See page 12, line 5 to page 13, line 5). Notice that that the processor sends in appropriate control vectors to the imager in order to implement the variable resolution imaging (i.e., IR). Windows are continuously reconfigured in response to time varying dynamics which includes target

position, target scale and tracking gates. As such, the previous rejections still stand as

proper.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 63-64, 66-69, 71, 73- 80, and 82-- 89 are rejected under 35 U.S.C.

103(a) as being unpatentable over Yang et al (WO 01/388825A1) in view of Kauer et al.

(US Pub. No. 2004/0106211).

Regarding claim 63, Yang discloses an infrared sensor (Figure 1) comprising:

a sensor array (see figure 1, element 100) comprising multiple IR sensors

(element 100 is made of pixel elements), for collecting IR energy from an external

scene; and a sensitivity adjuster (Figure 2, element 214) associated with said sensor

array, for adjusting between a field of view, and a grouping of sensing pixels to derive a

required image sensitivity (element 214 selects the window or grouping of sensor

elements, see figure 1, elements 102, 104 and 106). Yang further discloses an image

processor (i.e., window processing circuit), for processing a sensor array output signal

so as to form a signal for controlling said adjusting (page 10, lines 23-page 11, line 21,

IR sensor is re-configurable and is adjusted in real time). Yang fails to expressly

disclose said signal is a feedback signal adjusting the sensitivity. Notice, "feedback

loops" are well known and typical in the art. For example, Kauer et al. shows real-time

"feedback" control for optimizing device sensitivity, discrimination, and detection is known. In view of the utility, it would have been obvious to person of ordinary skill in the art at the time the invention was made to modify Yang to include the teachings (i.e., the expressed "feedback" such as that taught by Kauer.

Regarding claim 64, Yang discloses that the sensor array comprises an array of photon detectors (see figure 2, element 202 = pixel array of sensing elements which are photogates = photodetectors).

Regarding claim 66, Yang discloses an IR sensor wherein said sensitivity adjuster comprises a window selector for selecting a readout window within said array (see figure 1, window 1, window 2, window 3, each window can be selected to be read out).

Regarding claim 67, Yang discloses that the sensitivity adjuster comprises a grouping factor selector for selecting a pixel grouping factor during IR energy collection (see figure 1, element 104, and element 106 and element 102 are group different pixel groups together).

Regarding claim 68, Yang discloses an IR sensor in accordance, further comprising a readout element (elements 204) for performing periodic sensor array readout with a readout time variable with a size of a selected readout window (see page 16, lines 10-23, readout is done by different clock cycles).

Regarding claim 69, Yang discloses an IR sensor wherein said adjusting is in accordance with externally provided control information (page 10, lines 23-page 11, line 21, IR sensor is re-configurable and is adjusted in real time).

Regarding claims 71, 86 and 88, Yang discloses that the image processor further comprises an SNR detector for detecting an SNR of said image signal (page 41, lines 6-14).

Regarding claim 73, Yang disclose an IR sensor, further comprising a mode selector for switching between a high-sensitivity operating mode and a low-sensitivity operating mode in accordance with said feedback signal (See page 11, lines 18-21, high and low resolution modes).

Regarding claims 74-75, Yang discloses an IR sensor, further comprising a mode selector for switching between a small readout region and a large readout region, respectively to provide high-sensitivity and low-sensitivity imaging (page 41, lines 6-14).

Regarding claim 76, Yang discloses an IR sensor further comprising a video processor, for processing a sensor array output to form a video image (see page 45, lines 9-23, discloses a video camera).

Regarding claim 77, Yang discloses a method for IR sensing, comprising:

adjusting a pixel grouping of a sensor array to provide a required image sensitivity (see figure 1, various window or pixel groupings are provided to adjust the sensitivity of the sensor array, see also page 11, lines 18-21, Yang discloses different pixel groupings to created different image resolutions/sensitivities) collecting IR energy over a variable window from an external scene with said sensor array, in accordance with said pixel grouping (see figure 1, IR image using various pixel groupings, 102, 104 and 106 are detected). Yang fails to expressly disclose said signal is a feedback signal adjusting the sensitivity. Notice, "feedback loops" are well known and typical in the art.

For example, Kauer et al. shows real-time "feedback" control for optimizing device sensitivity, discrimination, and detection is known. In view of the utility, it would have been obvious to person of ordinary skill in the art at the time the invention was made to modify Yang to include the teachings (i.e., the expressed "feedback" such as that taught by Kauer.

Regarding claim 78, Yang discloses selecting a sensor exposure time (page 13, lines 18-19, discloses a frame time or exposure time dependent upon the resolution desired).

Regarding claim 79, Yang discloses that said selecting is to maintain an average collected charge of said sensor at a specified level (see claim 1, lines 12-14).

Regarding claim 80, Yang discloses that said method is performed repetitively at a maximum rate permitted by said pixel grouping and said selected exposure time (see claim 17).

Regarding claims 82 and 88, Yang discloses that said feedback signal comprises at least one of: average image SNR (See page 41, lines 23-24).

Regarding claim 83, Yang discloses averaging respective sensor levels over multiple sensor array readout cycles (see claim 15).

Regarding claim 84, Yang discloses switching between a high-sensitivity operating mode and a low-sensitivity operating mode (See page 11, lines 18-21, high and low resolution modes).

Regarding claim 85, Yang discloses analyzing a video IR image to identify specified properties of interest (see page 45, lines 9-23, discloses a video camera).

Claim 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang

and Kauer in view of Hsieh (NPL-"A New CMOS Circuit Design for the IR FPA...").

Regarding claim 65, Yang discloses a sensor array comprising a CMOS detector

(Page 10, lines 12-14) and does not explicitly state an IR FPA. However, CMOS based

IR FPAs are well known in the art, as disclosed by Hsieh (See abstract). It would have

been obvious to one having ordinary skill in the art at the time the invention was made

to have adapted the CMOS detector as an IR FPA in order to increase sensitivity and

immunity from and decrease noise.

Claims 72, 87 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Yang and Kauer in view of Park (US 4782396).

Regarding claims 72, 87 and 89, Yang discloses the limitation set forth claim 70

and does not specify a contrast detector in the image processor for detecting a contrast

level of the image signal. However, Park discloses a sensor, wherein said image

processor further comprises a contrast detector, for detecting a contrast level of said

image signal (column 2, lines 45-51). It would have been obvious to one having ordinary

skill in the art at the time the invention was made to have included the contrast detector

disclosed by Park with the invention disclosed by Yang in order to accurately focus the

detector to the object at hand.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to DJURA MALEVIC whose telephone number is

571.272.5975. The examiner can normally be reached on Monday - Friday between

8:30am and 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David Porta can be reached on 571.272.2444. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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